

## Social Gerontology. Part 2. Demography. The Effects of an Aging Population on Society

Number 22

May 28, 1984

Part 1 of this essay discussed the effects of aging on intelligence.<sup>1</sup> The most recent research indicates that aging has a minimal effect on the mental functioning of healthy adults. These findings are significant because they contradict the stereotype of the aged person as a mentally impaired and dependent individual. The findings also add important information on the question of the compulsory retirement age. This is but one aspect of the many ways in which an aging population affects society.

So, in this second part of the essay we will discuss the factors that have caused tremendous growth in the world's elderly population. Also discussed are the steps individual nations are taking to cope with the social and economic burdens of this major demographic shift.

Emily Grundy, Department of Health Care of the Elderly, University of Nottingham, England, defines demography as the "numerical portrayal of human populations." This field is concerned with the "mechanisms of population change and with the structure and composition of populations. Demographers," she continues, "also study the causes of population trends, their consequences, and techniques for measuring them."<sup>2</sup>

One of the most important worldwide population trends of this century is increasing numbers and proportions of aged citizens. In the US alone, the

number of persons aged 80 and older is expected to grow from the extant 5.6 million to more than ten million by the year 2000.<sup>3</sup> Demographers determine the reasons for this growth and project how many people will be in the elderly population in the future. Economists, politicians, and gerontologists use demographic data to plan social services and facilities for the elderly and determine if present services meet current needs.

Demographers generally agree that three basic processes affect population structure—fertility, mortality, and immigration. Jacob S. Siegel, Center for Population Research, Georgetown University, Washington, DC, notes that a common misperception among laypersons and social scientists is that increased longevity, resulting from lower mortality rates among the elderly, largely accounts for the growing elderly population.<sup>4</sup> In fact, fertility is the most important factor. It determines the number of people born within a given time period. Each group born within a specific interval, usually five to ten years, is referred to by demographers as a "birth cohort." This concept was incorporated into sociology at least partially as a result of research by Norman B. Ryder, Office of Population Research, Princeton University, New Jersey.<sup>5</sup> In his commentary on that *Citation Classic*<sup>™</sup>, Ryder suggests that his paper may have become

well-cited because the cohort approach "may have provided some insight into how to think demographically about non-demographic subjects."<sup>6</sup>

Shirley H. Rhine, an economist with the Conference Board, New York, notes that the US now has a large number of people aged 65 and older because of high fertility rates during the late 1800s and early 1900s.<sup>7</sup> This group's relative *share* of the population—about 11.6 percent in 1980—was determined by the fertility rates of the cohorts that preceded and followed it.

In many developed countries, especially the US, one of the most noteworthy demographic trends of this century was the high birth rate from about 1945 to the mid-1960s. This period is frequently referred to as the baby boom. Due to the "baby bust" or drop in fertility that followed,<sup>8</sup> baby boomers will continue to represent a disproportionately large percentage of the population. The size of this group, which is now aged from about 25 to 40, has caused major social changes in the US. When this group reached school age, thousands of new facilities had to be built for them. In the early 1970s, when they entered the labor force, they faced stiff competition and limited opportunities for advancement. Mary Beard Deming and Neal E. Cutler, Ethel Percy Andrus Gerontology Center, University of Southern California, Los Angeles, report that by the 2010-2020 decade, the baby boom cohort will become the "gerontic boom."<sup>9</sup> Politicians, economists, and gerontologists are already investigating the effects this growth of the elderly population will have on social security, private pensions, long-term care, education, and other social institutions.

Another process that influences population aging is the mortality, or death, rate. Infant mortality rates affect the size of a cohort by setting a limit on the number of members who survive. The im-

provement in infant mortality rates during the first half of this century played an important role in the rising number of elderly people. According to Grundy, "Elderly people in the West today represent the very first generations in which there was a reasonable chance of surviving infancy and living on to reach old age."<sup>2</sup>

Until the 1950s, mortality rates for individuals 65 and older dropped only slightly. Between 1900 and 1949 average life expectancy at age 65 rose from 11.9 to 12.8 years in the US.<sup>9</sup> Eli Ginzberg, Conservation of Human Resources Project, Columbia University, New York, reports that in 1980, however, life expectancy for a 65-year-old reached about 15 years for men and 20 for women.<sup>10</sup> As medical science gains better control over the primary killers of elderly people—heart disease, cancer, and stroke—mortality rates among older persons will continue to decline.

Immigration is the third process influencing population age. Historically, immigrants have largely been young males. Immigration tends to bring the average age of a population down while increasing the proportion of men. The wave of some 27.6 million immigrants to the US between 1881 and 1930 brought about changes in the male-female ratio and age of the population.<sup>9</sup> However, at present levels, legal immigration is unlikely to have any widespread demographic effect on the US as a whole. Richard Suzman, Behavioral Sciences Research Branch, National Institute on Aging, Bethesda, Maryland, suggests immigration may, in the long-term, affect the population structure of states experiencing heavy illegal immigration, such as Texas, California, and Florida.<sup>11</sup>

On a more local level, though, the migration of young people from the cities to the suburbs and rural areas has left increasingly older inner-city populations in the US and UK. Charles F. Longino,

Center for Social Research on Aging, University of Miami, Florida, and Jeanne C. Biggar, Department of Sociology, University of Virginia, Charlottesville, note that elderly people who had migrated to the southern US after retirement are returning to their home states. This generally occurs after they become widowed, ill, and in need of financial and other assistance.<sup>12</sup> Longino reports that this "return migration" often benefits Sunbelt states, since people moving to such states as Florida are usually younger, healthier, and more affluent than those returning home.<sup>13</sup> In many developing countries, immigration of the young to urban areas has produced older populations in rural districts.<sup>2</sup>

Although the worldwide population is aging, Western nations presently tend to have the oldest populations. This can be explained, at least partially, by changes associated with the demographic transition. Developed by F.W. Notestein, then of the Office of Population Research, Princeton University,<sup>14</sup> and colleagues and W.S. Thompson, then of the Department of Gerontology, Miami University, Oxford, Ohio,<sup>15</sup> the demographic transition theory holds that, with modernization, nations shift from high to low birth and death rates. In the preindustrial stage, high birthrates are accompanied by high death rates from famine, epidemics, and wars. During the transition, or second stage, high birthrates continue, but the mortality rate, especially for infants and children, declines significantly. This decline results from economic and technology-related improvements such as better nutrition, sanitary water, and better and more accessible health care. A country enters the third stage when it becomes industrialized. Since infants have a greater chance of survival, parents have fewer children. Death rates also drop because of medical and other technological im-

provements. Countries in this stage of the aging cycle may reach zero population growth, or even population decline.

Suzman says that a fourth stage in the demographic transition—the postindustrial stage—occurs when a country has gained control over infectious diseases and can turn its attention to the chronic diseases that typically afflict the elderly.<sup>11</sup> At this stage, the population includes many elderly people with heart disease, cancer, and stroke—diseases that earlier would have killed them. Suzman notes that a major question facing nations in this stage is whether chronic diseases will be curable or whether society will be faced with increasing proportions of disabled, dependent elderly.<sup>11</sup> This question is the subject of an interesting debate between James F. Fries, Department of Medicine, Stanford University Medical Center,<sup>16</sup> and Edward L. Schneider, Biomedical Research and Clinical Medicine, and Jacob A. Brody, Epidemiology, Demography, and Biometry Program, National Institute on Aging,<sup>17</sup> on the "compression of morbidity" into very old age. Kenneth G. Manton, Center for Demographic Studies, Duke University, Durham, discusses the implications of a decline or delay in chronic disease among the elderly for predicting mortality trends in the US.<sup>18</sup>

Barry D. McPherson, Department of Kinesiology, University of Waterloo, Ontario, Canada, says that many developing countries started to enter the transition stage after World War II.<sup>19</sup> In these countries, high birth and death rates and short life expectancies had produced fairly young populations. According to Philip M. Hauser, Population Research Center, University of Chicago, in 1976 the median age in less developed countries was 23, compared to 33 in the developed countries.<sup>20</sup> The governments of many of these countries are supporting programs to lower fertility rates. If these birth control efforts are

successful, the less developed countries will witness an increase in the proportion of elderly people. In fact, the aged population of developing countries worldwide is projected to grow 77 percent by the year 2000. Developed nations, in contrast, are expected to experience only a 30 percent increase.<sup>21</sup>

The situation of the elderly in these developing countries can be much more difficult than that of the aged in industrialized nations. According to Burkhard Schade, Department of Psychology, University of Dortmund, Federal Republic of Germany, Third World elderly generally are not supported by public institutions, as are their Western counterparts. Instead, most depend on their families, or their own ability to live self-sufficiently. If their families do not support them, they must rely on charity.<sup>22</sup> Their situation is exacerbated by the fact that they have to compete with other needy groups for limited funds.<sup>23</sup>

Further along in the population aging cycle are the US, USSR, Canada, Japan, Australia, and most of Southern and Eastern Europe. These countries are in the process of "aging." In contrast, the countries of northwestern Europe have already seen great increases in the proportion of elderly people and can be described as "aged."<sup>24</sup> Aged countries include the UK, Sweden, Austria, and the Federal Republic of Germany, where the elderly comprise at least 15 percent of the population.<sup>24</sup>

One of the most noteworthy characteristics of the present world, but especially elderly, population is a higher ratio of women to men. William Reichel, Department of Family Practice, Franklin Square Hospital, Baltimore, Maryland, notes that for persons aged 85 or older in the US, this ratio exceeds two to one.<sup>25</sup> This has been attributed to men's greater susceptibility to heart disease, cancer, and stroke, as well as their

higher death rates from wars and accidents. In Europe, emigration of young men to the US in the 1920s and 1930s also contributed to uneven male-female ratios.<sup>2</sup> Since women in most developed nations tend to retire with lower pensions and social security benefits than men, large numbers of elderly women in the population will place increasing pressure on the social institutions that support them.

Another characteristic of the worldwide elderly population is the rapid growth in the number of people, particularly women, aged 80 and older. In the next 20 years, the world population will include 24 million additional people who are 80 and over.<sup>21</sup> Suzman says that individuals aged 85 and older comprise America's fastest growing population.<sup>11</sup> George L. Maddox, director, Center for the Study of Aging and Human Development, Duke University, notes that these very old people are at the greatest risk of long-term chronic illness and disability. Nearly half of them also need assistance in carrying out the activities of daily life.<sup>21</sup> And, according to the American Association of Retired Persons, more than 20 percent of those over age 85 in the US live in institutions.<sup>26</sup> Moreover, Social Security and most pension benefits in the US are based to a certain extent on preretirement income. According to Ann Foner, Department of Sociology, Rutgers University, New Brunswick, New Jersey, and Karen Schwab, US Social Security Administration, Washington, DC, the benefits of people who retired many years ago when salaries were much smaller are generally lower than those of more recent retirees.<sup>27</sup> As a result, these very old persons draw on a disproportionately large share of public services, particularly health services. Gerontologists are currently looking for ways to increase independence among these very old, and

often disabled, people by offering home-based, rather than institutional, care. They are also investigating the future costs of income support and long-term, or nursing home, care for this larger population of very old people, and estimating the need for specialized housing and transportation.

Demographic change is prompting government officials to reexamine their retirement policies and the types of income and social support provided senior citizens. The old-age dependency ratio—the ratio of retired to working persons—is climbing worldwide, forcing governments to question the ability of future workers to finance income and social support for the elderly. According to the US Census Bureau's projections for moderate population growth, the aged dependency ratio (number of persons 65 and older per 100 persons 15 to 64) in the USSR and Eastern Europe is expected to increase from 14.6 in 1975 to 18.6 by the year 2000. In Latin America, this ratio is expected to increase from 7.1 to 7.5 during the same period.<sup>28</sup> In 1945, shortly after the US government began paying out Social Security benefits, each beneficiary was supported by the relatively smaller taxes of about 50 workers. Now each beneficiary is supported by higher taxes from about three workers. The situation looks even bleaker for the year 2035, when many members of the baby boom cohort will have retired.<sup>10</sup> Ginzberg reports that at that point, the ratio could be less than two taxpayers per beneficiary.<sup>10</sup>

The fact that people are living longer *after* retirement has also been a major factor in the precarious position of national pension systems. Partially as a result of this longer benefit payout period, nearly 28 percent of the US government's 1981 budget went to income support and social services for the elderly. Walter M. Beattie, School of Social

Work, Syracuse University, New York, notes that even at this rate nearly 15 percent of the US elderly, mostly women and minorities, remained below the poverty line.<sup>29</sup> The situation in the US parallels that of many European nations. In the Federal Republic of Germany, the cost of social security has multiplied sevenfold in the past 20 years. Italy expects its pension costs to double by 1989.<sup>30</sup>

Many social scientists believe that we will have to work to an older age in the future if benefits are to remain at present levels. In an effort that many hoped would reduce the benefit payout period and increase the amount of money collected for the Social Security fund, the US government in 1979 raised the mandatory retirement age from 65 to 70.<sup>31</sup> Most reports indicate, however, that this has not had the desired effects.<sup>7</sup> Rather, the trend toward earlier retirement that began after World War II and accelerated in the 1960s continues. Only 19 percent of men 65 and older are in the US labor force now, compared to 48 percent in 1947.<sup>7</sup> The number of men aged 65 and up in the work forces of many other Western nations has also dropped dramatically—from 50 percent in 1931 to about 11 percent in 1981 in the UK, and from 30 percent in 1968 to 16 percent in 1978 in France.<sup>7</sup>

A variety of factors account for the trend toward early retirement in Western nations. These include a diminution of the stigma associated with abandoning an economically productive role. The growing availability of private pensions—at least partly attributable to the desire of management and labor to bring in "new blood"—has also made retirement more attractive. Robert L. Clark, Department of Economics, North Carolina State University, Raleigh, believes governmental retirement policies are also responsible.<sup>32</sup> In the US, one such

policy was the expansion and earlier availability of Social Security benefits. Since its passage in 1935, hospital and medical benefits (Medicare) and disability insurance have been added to Social Security. Benefit levels have risen several times and, in 1972, the government added automatic cost-of-living adjustments. The availability of early retirement at age 62 with reduced benefits has prompted people to leave the work force before age 65. And the Social Security "earnings test"—in which \$1 of Social Security is forfeited for every \$2 earned above an exempt amount—has discouraged people eligible for Social Security from continuing to work.

In several European countries, early retirement is encouraged as a deliberate government policy. Mary J. Gibson, associate editor, *Ageing International*, reports that many European governments, faced with high unemployment rates among youth, are offering attractive early retirement benefits in order to open more jobs for young people. In the Netherlands, individuals who have worked for the same firm for the preceding ten years may retire at age 62 at about 85 percent of their full-time wage. In France, workers who are laid off at age 60 or later, or who resign and agree not to take another job, can collect about 70 percent of their last salary. Although the goal of these programs is to reduce unemployment, Gibson says that such schemes generally have not opened up many jobs for young unemployed people.<sup>33</sup>

Although most governments of industrialized nations are faced with serious challenges to their social security systems, private pensions are mitigating the problem in a few countries. In Finland and Switzerland, private firms are legally required to provide retirement pensions. And some 80 to 90 percent of wage and salary workers are covered by pensions

under industry-wide collective bargaining agreements in France and Sweden.<sup>29</sup> Legislation has been passed in the US to encourage companies to offer pensions.<sup>34</sup> But, in 1980, only about 21 percent of the retired population received private pension income.<sup>29</sup> The situation is appreciably better for US government workers, 90 percent of whom are covered by private pensions.

But, given present laws, pensions are unlikely to fill the growing needs of America's burgeoning and increasingly long-lived nonworking population. What seems to be needed, particularly in preparation for the gerontic boom predicted for the years 2010-2020, are major structural changes in the Social Security and pension system, and in work and retirement patterns.

Many changes in this direction were recently enacted through the Social Security Amendments of 1983.<sup>35</sup> These include a gradual rise in the retirement age to 67 by the year 2027, coverage of newly hired federal employees who had earlier been exempt from the system, and the taxation of Social Security benefits for retirees with higher incomes. The amendments also delayed the annual cost-of-living adjustment for 1983 benefits and increased the 1984 Social Security payroll tax.

McPherson says that other options discussed include paying a portion of Social Security benefits out of general tax revenues, rather than just out of the Social Security tax levied on employees and employers.<sup>36</sup> Some commentators have suggested that workers pay taxes to be applied to their future Social Security benefits. Social Security benefits are now paid out of taxes from current workers.

Whichever approaches are taken, it is evident that the early retirement trend is becoming too expensive and will have to be changed. On a more optimistic note,

though, the majority of respondents in a 1979 Harris poll of US citizens indicated they would be more willing to work beyond retirement age if flexible work options were available.<sup>37</sup> However, most would not work if it meant forfeiting benefits. Older persons said they would be most interested in part-time work, usually the same as or similar to their full-time jobs. M.H. Morrison, Department of Public Policy and Management, Wharton School, University of Pennsylvania, Philadelphia, notes a considerable response in firms that have offered part-time work to older workers. Unfortunately, few firms offer this opportunity.<sup>38</sup>

More flexible work options are available in Europe. The governments of France, Sweden, and Norway have enacted legislation to help older workers ease into retirement by working fewer hours and days over a period of weeks, months, or even years.<sup>33,39</sup> Some of these programs provide for partial pension benefits to offset earnings lost by reducing work schedules. In her survey of phased retirement in the UK, France, Belgium, and the Federal Republic of Germany, Constance Swank, National Council for Alternative Work Patterns, a Washington, DC-based organization that concerns itself with work scheduling, discusses several companies that have established programs to reduce the working time of older workers before full retirement.<sup>39</sup> In general, one can participate in these programs with little or no reduction in benefits or compensation.

Linda G. Martin, Department of Economics, University of Hawaii, Honolulu, says many Japanese companies allow post-retirement age workers to stay on at lower salaries, often in less responsible positions.<sup>40</sup> Although a few US companies, most notably Polaroid, John Deere, and Grumman, offer phased re-

tirement or part-time work for older employees, such programs are very much the exception.<sup>41</sup> However, some economists are predicting that the number of new entrants into the labor force will decline in the next few decades, due to the declining fertility rate that followed the baby boom.<sup>7</sup> This may provide more and better opportunities for older workers, particularly those willing to take entry-level jobs.<sup>8</sup>

Demographic research has had an important influence on the many disciplines contributing to social gerontological research. Consequently, papers on the effects of population aging appear in a wide variety of journals, particularly, of course, those devoted to aging and to demography. John Balkema, librarian, National Council on the Aging, notes that major social gerontology libraries find it necessary to subscribe to over 400 journals in order to cover the field.<sup>42</sup> It is not possible to name all the journals covering gerontological research here. However, the journals covered in *Social Sciences Citation Index*<sup>\*</sup> (SSCI<sup>\*</sup>) that are devoted exclusively to aging and demography are listed in Tables 1 and 2, respectively.

A few of the journals not devoted exclusively to aging which carry many articles on the effects of age on intelligence, discussed in the first part of this essay, are *Journal of Educational Psychology*, *Journal of Abnormal Psychology*, *Amer-*

**Table 1:** Journals covered in the 1983 SSCI\* devoted to aging research.

Aging and Work  
 Educational Gerontology  
 Gerontologist  
 International Journal of Aging & Human  
 Development  
 Journal of Geriatric Psychiatry  
 Journal of Gerontology  
 Journal of the American Geriatrics Society  
 Research on Aging  
 Zeitschrift für Gerontologie

**Table 2:** Journals covered in the 1983 SSCI\* devoted to demographic research.

Demográfia  
 Demography  
 International Migration  
 International Migration Review  
 Journal of Biosocial Science  
 Journal of Family History  
 Population  
 Population and Development Review  
 Population and Environment  
 Population and Social Structure: Advances in  
 Historical Demography  
 Population Bulletin  
 Population Index  
 Population Research and Policy Review  
 Population Studies—London  
 Social Biology  
 Studies in Family Planning

*ican Psychology, Human Development, Developmental Psychology, and Journal of Social Psychology.* Papers on the effects of population aging on the labor force are carried in such journals as *Monthly Labor Review, International Labor Review, and Population Research and Policy Review.* However, the only journal devoted solely to age and work is *Aging and Work*, formerly published as *Industrial Gerontology*. All these journals are covered in SSCI and *Current Contents®/Social & Behavioral Sciences*.

Much of the important literature on social gerontology has appeared in books. Some of the most prominent of these are *Why Survive? Being Old in America*,<sup>43</sup> by Robert N. Butler, Department of Geriatrics and Adult Development, Mt. Sinai Hospital, New York; *Handbook of Aging and the Social Sciences*,<sup>44</sup> edited by Robert H. Binstock, Program in the Economics and Politics of Aging, Brandeis University, Waltham, Massachusetts, and Ethel Shanas, Department of Sociology, University of Illinois, Chicago; and *The Economics of Individual and Population Aging*,<sup>45</sup> by R.L. Clark and Joseph J. Spengler, Department of Economics, Duke University. Three important sociological vol-

umes, edited by Matilda White Riley, National Institute on Aging, and colleagues, were published under the overall title, *Aging and Society*.<sup>46-48</sup> Historical accounts of old age in the US are available in *Growing Old in America*,<sup>49</sup> by David H. Fischer, Department of History, Brandeis University, and *Old Age in the New Land*,<sup>50</sup> by W.A. Achenbaum, Department of History, Carnegie Mellon University, Pittsburgh.

Some of the demographic research now under way deals with predicting population growth and aging trends. Many of the predictive models appear in the mathematical literature and are discussed in papers identified through our analysis of research fronts in the *Compu-Math Citation Index®*. Research fronts are specialty areas identified by clustering current papers that cite one or more core papers for that topic. The 15 core papers<sup>51-65</sup> in the front entitled "Non-negative matrices and ergodicity of age structure in populations with Markov vital rates" discuss models for predicting the age structure of a population based on the recent history of birth and death rates. The four core papers<sup>66-69</sup> in the front "Nonlinear age dependent population growth" discuss models for predicting population growth when fertility and mortality rates respond to environmental factors. These models attempt to deal with situations in which, for example, the death rate rises as the population grows. Linear models, in contrast, would hold the death rate constant regardless of population density. Since it is not our main purpose to identify this area of research in detail, we have not identified the many institutions where this research is done.

Since population aging has already had a major effect on society, it is not surprising that organizations concerned with the rights and welfare of senior citi-

**Table 3:** A selected list of organizations devoted to promoting the interests of elderly people.

American Association of Retired Persons  
1909 K St., NW  
Washington, DC 20049  
202-872-4700

Asociación Nacional Pro Personas Mayores  
1730 West Olympic Blvd., Suite 401  
Los Angeles, CA 90015  
213-487-1922

Gray Panthers  
3635 Chestnut St.  
Philadelphia, PA 19104  
215-382-3300

International Federation on Aging  
1909 K St., NW  
Washington, DC 20049  
202-872-4700

National Caucus and Center on Black Aged, Inc.  
1424 K St., NW, Suite 500  
Washington, DC 20005  
202-637-8400

National Council of Senior Citizens  
925 15th St., NW  
Washington, DC 20005  
202-347-8800

National Council on the Aging, Inc.  
600 Maryland Ave., SW  
West Wing 100  
Washington, DC 20024  
202-479-1200

National Indian Council on Aging, Inc.  
P.O. Box 2088  
Albuquerque, NM 87103  
505-766-2276

zens abound. According to Henry J. Pratt, Department of Political Science, Wayne State University, Detroit, Michigan, excluding local chapters of national organizations, some 1,000 individual groups promote the interests of the elderly.<sup>70</sup> The most visible and active among these are the Gray Panthers, the American Association of Retired Persons, the National Council of Senior Citizens, the National Council on Aging, and the National Association of Retired Federal Employees. Other smaller caucus-like bodies serve subgroups of the

old. These include the National Council on Black Aged and Asociación Nacional Pro Personas Mayores (National Association of Hispanic Elderly). Several of these organizations are listed in Table 3.

The changing age structure of the worldwide population will obviously have a tremendous impact in the future, as it already has. By the year 2020, when elderly US citizens outnumber teenagers by two to one, we will probably see a shift away from the present emphasis on youth. Instead of watching commercials for hamburgers, sneakers, and tight jeans, we may see a marketplace oriented more toward retirement communities, continuing education, and other interests of what is predicted to be a more educated, affluent, and healthier elderly population.

Other societal changes may not be benign. In the US, as in most developed nations, people may have to work to an older age before retirement. Depending on your work, this may or may not be good news. An earlier essay on longevity research<sup>71</sup> noted that very few people are working on increasing the human life span. Leonard Hayflick, Center for Gerontological Studies, University of Florida, one of our primary information sources on that topic, notes in a *New York Times* interview that such research may not even be desirable. Unless plans are made soon to cope with it, a ten- or 20-year increase in longevity could have "absolutely catastrophic" social effects.<sup>72</sup>

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*My thanks to Joan Lipinsky Cochran and Terri Freedman for their help in the preparation of this essay.*

1984 ISI

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